

REMARKS

Reconsideration and allowance of the present application are respectfully requested.

Claims 1-13 are all the claims pending in the application, of which claims 1 and 11 are independent. Applicants respectfully submit that the claims define patentable subject matter.

Statement of Substance of Interviews

Applicants thank the Examiner for the courteous interviews of August 20, 2009 and September 3, 2009. No agreement was reached by the parties. During the August 20, 2009 interview, the Examiner referred to Hartmann et al. (U.S. Publication 2003/0080857; hereinafter “Hartmann”) for Applicants to consider when submitting any amendments. Applicants have considered Hartmann and respectfully submit that the claims as amended are patentable over the art of record as well as Hartmann.

Claim Rejections 35 U.S.C. § 102

Claims 1, 2, and 11-13 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Inoue et al. (U.S. Patent Publication 2002-0030481; hereinafter “Inoue”).

Applicants have herein amended claim 1 to recite a device for detecting an abnormality of a rotating body comprising, among other features, “means for measuring a signal correlated with vibration or sounds of the rotating body in rotation.” Applicants have canceled claim 2.

Inoue relates to a method of detecting wheel speed, wheel acceleration, vehicle vibration, and tire air pressure based upon edge information on a rotor 12 that rotates with the vehicle wheel (paragraphs [0010] and [0014]). Inoue includes a wheel speed sensor 13 that measures the rotor teeth of the rotor 12 on the basis of a magnetic field changing with the passage of the rotor teeth (paragraph [0027]).

Inoue also discloses a conventional tire air pressure detecting means (paragraph [0048]) which clearly does not correspond to the claimed means for measuring a signal correlated with vibration or sound.

In light of this, claim 1 is patentable over Inoue at least for its recitation of “means for measuring a signal correlated with vibration or sounds of the rotating body in rotation.”

Additionally, it is respectfully submitted that the band-pass filter of Inoue does not correspond to the claimed adaptive filter, as alleged by the Examiner. The only band-pass filter of Inoue merely removes any air pressure information within a certain frequency (paragraphs [0049] and [0052]). In other words, the alleged band-pass filter of Inoue does not pick out a signal having no correlation with the rotation cycle and a signal synchronized with the rotation cycle extracted by the extracting means.

Furthermore, there is no disclosure in Inoue that the band-pass filter is adapted by means of the signal picked out and having no correlation with the rotation cycle. Inoue merely discloses that if enough data has not been accumulated, data is continued to be accumulated (paragraph [0050]). The Examiner also points to paragraph [0051] as allegedly disclosing this feature. However, this paragraph of Inoue merely teaches how to determine the resonance frequency based upon a Fourier analysis of the air pressure information.

In light of this, claim 1 is further patentable over Inoue because Inoue does not disclose “wherein the extracting means comprise an adaptive digital filter which extracts a signal synchronized with the rotation cycle and picks out a signal having no correlation with the rotation cycle by means of a data measured by the measuring means and a signal synchronized with the rotation cycle extracted by the extracting means, and adapts the adaptive digital filter by means of the signal picked out and having no correlation with the rotation cycle.”

Accordingly, it is respectfully submitted that claim 1 is patentable over Inoue at least because Inoue does not disclose all of the features of claim 1.

Claim 12 should be patentable at least by virtue of its dependency.

Applicants have herein amended claim 11 to recite a device detecting an abnormality of a rotating body comprising, among other features, “measuring a signal correlated with vibration or sound of the rotating body in rotation.”

It is submitted that claim 11 is patentable over Inoue at least for the same reasons discussed above relating to claim 1.

Claim 13 should be patentable at least by virtue of its dependency.

Claim Rejections - 35 U.S.C. § 103

Claims 3-10 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Inoue in view of Brusarosco et al. (U.S. Patent Publication 2007/0010928; hereinafter “Brusarosco”).

Brusarosco relates to a method of determining vehicle load of a tire and fails to remedy the deficiencies of Inoue. Therefore because claims 3-10 depend from claim 1, these claims should be patentable at least by virtue of their dependencies.

Furthermore, Applicants note that the Examiner did not respond to Applicants’ previous arguments regarding Brusarosco as it relates to dependent claims 5 and 6. Therefore, Applicants respectfully submit that these arguments (see April 24, 2009 Amendment, pages 9 and 10) remain valid and reasonable. These arguments are reiterated below.

In regard to claim 5, the Examiner points to paragraph [0020] of Brusarosco as allegedly teaching a delay circuit provided on a signal line between an input portion of data from the measuring means and an adaptive digital filter, as included in claim 5 (Office Action, page 5).

The Examiner alleges that it would have been obvious to provide a delay circuit to delay the data (Office Action, page 6).

However, this paragraph of Brusarosco merely discloses that before measuring the amplitude, the signal is filtered with a low-pass filter (paragraph [0020]). Those skilled in the art would understand that a low-pass filter is not the same as a delay circuit. The low-pass filter of Brusarosco merely filters the deformation signal and discriminates the useful signal from high-frequency noise caused between the tread band and the road (paragraph [0079]).

Additionally, regarding claim 6, the Examiner points to paragraph [0006] of Brusarosco as allegedly teaching a delay circuit provided on a signal line between an input portion of data from the measuring means and a comparator, as claimed (Office Action, page 6).

However, this paragraph describes a prior art patent that measures the distance between a vehicle axle and the road to determine tire deflection which is, according to Brown, “a comparatively exact measure of the respective [tire] load” (paragraph [0006]). Those skilled in the art would clearly understand that this measurement in Brown of tire load is not the same as the claimed delay circuit.

Because neither Inoue nor Brusarosco teach a delay circuit, claims 5 and 6 are separately patentable over the cited references for the features recited therein.

Regarding claim 9, the Examiner alleges that the sampling device of Brusarosco allegedly corresponds to the claimed features that “the data measured by the measuring means is sampled by a variable sampling in accordance with the data of rotating speed information.”

However, Brusarosco merely discloses that a sampling device samples the signal “at a frequency of at least 5 kHz, preferably of at least 7 kHz” (paragraph [0048]), but fails to allege

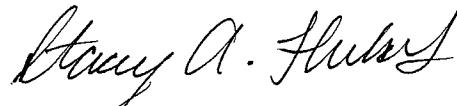
that the sampling is in accordance with any rotating speed information. Accordingly, it is submitted that claim 9 is further patentable for the features recited therein.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: September 28, 2009